

What is claimed is:

1. A cryogenic medical system comprising:
  - a medical device;
  - a console including accessories, the console connectable to the medical device at a connection point, the console controlling temperature of the medical device, and the console including
    - a first cooling system directing coolant to the medical device at a first temperature along a coolant supply line; and
    - a second cooling system chilling the coolant within the coolant supply line to a temperature below the first temperature before the coolant reaches the connection point.
2. The system of claim 1, wherein the medical device includes a catheter.
3. The system of claim 2, wherein the first cooling system includes a coolant return line leading from the medical device, and wherein the first cooling system and the medical device comprise a substantially closed-loop.
4. The system of claim 3, wherein the first cooling system includes:
  - a first compressor in fluid communication with a first condenser outputting coolant into the coolant supply line; and
  - a vacuum pump in fluid communication with the first compressor that establishes a pressure within the coolant return line that is below ambient atmospheric pressure.
5. The system of claim 3, wherein the second cooling system includes an enclosure having an inlet and an outlet; the enclosure defining a fluid path from the inlet to the outlet, and the enclosure enveloping a portion of the coolant supply line.

1        6.        The system of claim 5, further comprising a second compressor in fluid  
2 communication with a second condenser outputting coolant to the inlet of the  
3 enclosure and receiving coolant from the outlet of the enclosure.

1        7.        The system of claim 2, wherein the first cooling system includes a coolant  
2 return line leading from the catheter to a coolant scavenging system, and wherein the  
3 first cooling system and the catheter comprise a substantially open-loop.

1        8.        The system of claim 7, wherein the first cooling system includes:  
2                a coolant reservoir in fluid communication with the fluid supply line; and  
3                a vacuum pump interposed between the catheter and the coolant collection  
4 tank.

1        9.        The system of claim 8, wherein the vacuum pump creates a pressure within the  
2 catheter that is below ambient atmospheric pressure.

1        10.       The system of claim 7, wherein the second cooling system includes an  
2 enclosure having an inlet and an outlet; the enclosure defining a fluid path from the  
3 inlet to the outlet, and the enclosure enveloping a portion of the coolant supply line.

1        11.       The system of claim 10, further comprising a compressor in fluid  
2 communication with a condenser outputting coolant to the inlet of the enclosure and  
3 receiving coolant from the outlet of the enclosure.

1           12.    The system of claim 10, further comprising:  
2                   a coolant reservoir in fluid communication with the fluid supply line;  
3                   a second fluid supply line in fluid communication with the coolant reservoir  
4           and the inlet of the enclosure.

1           13.    The system of claim 12, further comprising:  
2                   a temperature sensor for measuring the temperature within the enclosure; and  
3                   a coolant flow regulator responsive to the temperature sensor for controlling  
4           fluid flow from the second fluid supply line into the enclosure.

1           14.    The system of claim 12, further comprising a temperature sensor for  
2           measuring the temperature within the fluid supply line; and  
3                   a coolant flow regulator responsive to the temperature sensor for controlling  
4           fluid flow from the second fluid supply line into the enclosure.

1           15.    A cryogenic medical system comprising:  
2                   a catheter;  
3                   a console including accessories, the console connectable to the catheter at a  
4           connection point, the console controlling temperature of the catheter, and the console  
5           including  
6                   a first cooling system including  
7                           a coolant supply line leading to the catheter,  
8                           a coolant return line leading from the catheter,  
9                           a first compressor in fluid communication with a first condenser  
10          outputting coolant into the coolant supply line, and  
11                   a vacuum pump in fluid communication with the first  
12          compressor that establishes a pressure within the coolant return line that is below  
13          ambient atmospheric pressure; and  
14                   a second cooling system including  
15                           an enclosure having an inlet and an outlet, wherein the  
16          enclosure defines a fluid path from the inlet to the outlet, and the enclosure envelops a  
17          portion of the coolant supply line of the first cooling system; and  
18                           a second compressor in fluid communication with a second  
19          condenser outputting coolant to the inlet of the enclosure and receiving coolant from  
20          the outlet of the enclosure.